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tial feature of Mendelism by showing segregation; and they are due to the action of more than one transmissible character."

A discussion of *size characters* is next taken up, including observations on numbers of rows of kernels on ear, height of plant, length of ear and size of seed. Studies of these characters are naturally beset with complications, the results being often obscured by the influence of environmental effects. However, the experiments disclosed segregation with respect to these characters, and the conclusion is therefore drawn that size characters do mendelize. Perhaps the most important point in this connection is the suggestion that in such cases which have heretofore ordinarily been considered as continuous variations, we may actually have to do with a series of Mendelian factors in operation, naturally quite difficultly discernible on account of the complex polyhybrid ratios involved, the absence of dominance, and the obscuring effect of environmental influences.

Part V. contains an account of a number of interesting *abnormalities* which arose among these various cultures. The appearance of several dwarf plants is described, but their significance is rather obscure, since no ratios were obtained. Bifurcated ears transmitted this abnormality as a dominant. In the case of striped foliage arising as though by mutation in some of these strains, the striped plants are considered to be heterozygous.

Aside from the interesting content of the bulletin, the authors are to be congratulated on its general appearance and make up. It is well illustrated by 25 plates of excellent photographic reproductions. The data are well chosen and presented in very convenient arrangement.

L. H. SMITH

NOTES ON METEOROLOGY AND CLIMATOLOGY

THE MOST NORTHERLY SCIENTIFIC INSTITUTION

THE weather observatory recently established by the Norwegian Meteorological Institute at Spitzbergen, 1,100 miles north of Christiania, is the most northerly permanent scientific institution of any kind in the world.

Meteorological data are communicated to the central office by means of wireless telegraphy *via* Green Harbor. The progress made at the observatory may be watched with interest, as it is hoped that the data there obtained will aid in European weather forecasting. The Norwegian project is separate and distinct from the German expedition, headed by Drs. Wagner and Rempp, which is now carrying on research in aerology and geophysics in Spitzbergen.

THE ANNUAL REPORT OF LINDENBERG OBSERVATORY

THE report of the Royal Prussian Aeronautical Observatory at Lindenberg for the year 1910 has recently appeared. As has been the case during several years, preceding, upper-air investigations were conducted daily, without a single exception, throughout the year. The meteorograph was elevated by means of kites 459 times, and by means of captive balloons 211 times, the average height with the former method being 9,866 feet, and with the latter 9,898 feet, both of which are higher than the corresponding averages for any earlier year. Of 29 registering balloons sent up 27 were recovered, and the average height attained was 49,028 feet (9.3 miles). On August 20 the greatest height yet reached at Lindenberg was recorded, the barograph indicating a height of 82,138 feet (15.6 miles). 177 pilot balloons carrying no recording instruments were also sent up during the year, data of wind velocity and direction aloft being obtained from these ascensions. In addition to the aerological data, which are printed in detail, the report contains five papers prepared by various members of the observatory staff.

WATER VAPOR IN THE ATMOSPHERE

IN observations with a telescope, bolometer or pyrliometer the approximate amount of water vapor in the atmosphere is an important factor. The determination of this amount by spectroscopic methods is not very satisfactory. In order to simplify the evaluation of this factor Professor W. J. Humphreys has examined the data obtained in 74 balloon flights made on cloudless days. Conditions on

cloudless days alone were considered, since in practical work a knowledge of the moisture content is needed only upon such days. The data used pertain to Europe alone, but presumably are fairly representative of conditions everywhere, since they cover the observations of several years and were obtained at many different places. Though the amount and the distribution of the water vapor in the atmosphere varies greatly from day to day and from place to place, it is interesting to learn that there is a tendency toward a maximum of humidity just above one of the levels of maximum cloudiness, the cumulus level. While there were no clouds at this or any other level at the times of observation, the water vapor was relatively abundant there, and, though not dense enough to produce a cloud, was made manifest by the readings of the hygrometer. Among the conclusions stated by Professor Humphreys (*Bulletin of the Mount Weather Observatory*, Vol. 4, Part 3) are the following:

The amount of water vapor per unit volume decreases with elevation in an approximate geometric ratio, and the thickness of the water layer that would result from a condensation of all the water vapor in the atmosphere above any given level, whatever the season, so long as cloudless days are used, may be approximately expressed by the equation, $d = 2w$, in which d is the depth of the water layer in millimeters and w the weight in grams of the water vapor per cubic meter at the given level or place of observation. An alternate, and probably equally good expression, is, $d = 2e$, in which d , as before, is the depth of the water layer in millimeters, and e the partial pressure of the water vapor in millimeters of mercury.

Professor J. Hann had previously concluded, from observations made upon all kinds of days, regardless of cloud, that $d = 2.3e$, or about 15 per cent. greater than the value now found for clear days.

NEW BOOKS

AMONG the books which have recently appeared are: (1) "Thermodynamik der Atmosphäre," by Dr. Alfred Wegener. Leipzig, J. A. Barth, 1911. 8°. 331 pp. (2) "Aeronautische Meteorologie," Teil II., by Dr.

Franz Linke. Frankfurt a. M., F. B. Aufarth, 1911. 8°. 126 pp. (3) "Climatic Control," by L. C. W. Bonacina. London, Adam and Charles Black, 1911. 8°. 167 pp. (4) "Studie über Licht und Luft des Hochgebirges," by Dr. C. Dorno. Braunschweig, F. Vieweg & Sohn, 1911. f°. 153 pp. (5) "Dynamic Meteorology and Hydrography," Part II., Kinematics, by V. Bjerknes and different collaborators. Washington, Carnegie Institution of Washington, 1911. 4°. 175 pp. (6) "The Clouds and Fogs of San Francisco," by Alexander McAdie. San Francisco, A. M. Robertson, 1912. 8°. 106 pp.

EXCESSIVE PRECIPITATION

DURING the month of July last, Luzon, the largest of the Philippine Islands, was visited by three typhoons accompanied by rains which are among the heaviest on record anywhere upon the earth. The precipitation accompanying the first typhoon was greatest at Baguio, the summer capital and official health resort of the islands. The rainfall there, as registered by an automatic gauge of standard design, was as follows: 14th, 34.64 inches; 15th, 28.88 inches; 16th, 16.73 inches; 17th, 7.89 inches—a total of 88.14 inches in four days. (The *mean annual* rainfall for New York City is 45 inches.) The second storm was severest at Bolinao, where 26.69 inches of rain fell during July 20 to 27, inclusive. With the third typhoon, that of July 30 to August 2, inclusive, 23.80 inches fell at Candon, while Baguio received an additional 20.14 inches. Naturally the floods following these unprecedented downpours did enormous damage. The \$2,000,000 military road stretching for 52 miles over the mountains between Dagupan and Baguio was seriously damaged. It had previously been forecasted that this road, regarded as one of the engineering feats of the islands, would remain "until the Pyramids crumbled." The rainfall at Baguio during the four consecutive days of the first storm has rarely been exceeded anywhere in recent times. The only records of greater amounts for a similar period are: (1) 101.84 inches at Cherrapunji, India, June 12 to 15,

inclusive, 1876, and (2) 96.50 inches at Silver Hill, Jamaica, in November, 1909. The Indian station, located upon the Himalayan slopes, near the Bay of Bengal, remains the wettest spot on the globe. It is reported that during one month, August, the rainfall measured 384 inches, and it is believed that the annual precipitation is over 600 inches.

A NEW WEATHER SIGNAL

SINCE December 1 a new marine signal consisting of a red pennant has been displayed by the United States Weather Bureau to signify the approach of high winds which would not justify the issue of the regular storm warning. It is known as the "small craft warning," as it is designed especially for the owners of fishing, towing, motor and yachting craft. The pennant is flown from the officially designated flagstaffs on the Atlantic, Pacific and Gulf coasts, as well as along the borders of the Great Lakes. Judging from recent press reports the innovation is proving of value to those for whom it was intended.

CONCERNING AVIATION FATALITIES

AMONG the suggestions which have been offered to explain various fatal accidents in aviation recently is that which one aviator describes as "ethereal asphyxia, a dreadful something which lurks in the upper air and creeps irresistibly upon the senses of the aviator, lulling him into a dreamy unconsciousness." He declared that it was not due to rarefied atmosphere, as there was no stifling, choking or pain in the ear-drums, such as often results from decreased pressure. The falsity of the explanation is apparent to any one who considers the matter, for aeronauts have, for more than a century, ascended to far greater heights than the aeroplane has yet reached, and no "mysterious gas" has been reported. Soundings of the free air have established the fact that up to the greatest height attained by an aeroplane, about two miles, the composition of the atmosphere is sensibly the same as at the ground. However, some of the fatalities occurring can not be explained by mechanical defects, gusts of

wind, or "air-holes." Might not the "ethereal asphyxia" be similar to the drowsiness experienced by certain people in windy weather? Persons who have climbed to the summits of high hills or mountains often express a desire to lie down and sleep. Moreover, the cold aloft is another factor to be considered. One traveling in a balloon experiences a perfect calm about him and thus is not greatly affected by the low temperatures. But every one who has sat in the front seat of a rapidly moving automobile on which there was no wind-shield can readily imagine how chilling must be the air encountered by an aviator traveling against the wind. Even in mid-summer temperatures below freezing are met at a height of two miles, and such air, brushing past the aviator at a rate of a mile a minute, might soon cause temporary paralysis of the limbs, resulting in a loss of control of the craft. The heaviest clothing yet worn by an aviator could hardly give him the protection needed. Accelerated heart-action, nervous tension, fatigue and other factors doubtless contribute to the aviator's distress. The problem is not wholly a meteorological one.

ANDREW H. PALMER

BLUE HILL OBSERVATORY,
February 1, 1912

SPECIAL ARTICLES

ON THE ORIGIN OF AN ALBINO RACE OF DEER-MOUSE

THE first case of Mendelian inheritance shown to exist among animals was that of total albinism in mice. In this condition the fur is snow-white and the eyes are pink, they like the fur being entirely devoid of skin-pigment. For the pink color of the eyes is due to the blood seen through the transparent eye; it disappears at death.

The ordinary white mouse is an albino variety of the common house mouse, with which it crosses readily. Cross-bred offspring (F_1) are never white, but like the wild parent in color. But in the next generation (F_2), part of the offspring are albinos. On the average one fourth are albinos, and these breed true in accordance with Mendel's law.